



## QUESTION PAPER

<b><u>SUBJECT</u></b>	<b>: BUILDING SERVICES</b>
<b><u>CODE</u></b>	<b>: ATG311</b>
<b><u>DATE</u></b>	<b>: YEAR-END EXAMINATION NOVEMBER 2014</b>
<b><u>DURATION</u></b>	<b>: (3 HOURS)</b>
<b><u>WEIGHT</u></b>	<b>: 40: 60</b> (exam mark: year mark)
<b><u>TOTAL MARKS</u></b>	<b>: 100</b>
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<b><u>EXAMINER</u></b>	<b>: MR. P. E. MARE</b>
<b><u>MODERATOR</u></b>	<b>: MR. S. R. CRETNEY</b>
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### **INSTRUCTIONS:**

1. Examination scripts to be used as a cover.
2. Freehand diagrams to be done within examination script and are to be clear and concise – expected drawings from architectural students.
3. Read all the questions carefully before answering and reply appropriately.
4. All written answers to be done in your examination script.
5. Untidy, unclear & poor drawings are discouraged and will be marked accordingly.
6. All loose papers and additional examination scripts **MUST** be clearly marked with your name, student number and subject code.
7. Appropriate colours may be utilised to support your illustrations.
8. Marks allocated to each question are indicated – one point required per mark.
9. Answer all questions.

### **QUESTION 1 – STORMWATER (10)**

- 1.1 Explain what is a flood line? (5)
- 1.2 Briefly explain what you understand of the following: - (5)
  - 1.2.1 RR5 – Connection to Storm-water Sewer
  - 1.2.2 RR6 – Use of Street Surface Drainage System

### **QUESTION 2 – DRAINAGE (10)**

- 2.1 There are two types of soak-aways and / or French drains, namely; filled and unfilled. Explain each briefly. (5)
- 2.2 Identify 5 points pertinent to the design of a drainage layout (5)

### **QUESTION 3 – DUCTS & SERVICE ZONES (8)**

- 3.1 Explain what a “common trench” is. (3)
- 3.2 Fire can be a major hazard in a building and a number of points need investigating should one be considering a service duct. Identify 5 points to consider. (5)

### **QUESTION 4 – HOT & COLD WATER (6)**

- 4.1 Explain what is meant by hard and soft when relating them to water. (1)
- 4.2 What is added to water to remove both temporary and permanent hardness to make it suitable for human consumption? (1)
- 4.3 What is finally added to our drinking water & why? (1)
- 4.4 Explain the workings of a hot water geyser. (3)

### **QUESTION 5 – ELECTRICITY (8)**

- 5.1 Explain the following terms: -
  - 5.1.1 Ampere (amp). (1)
  - 5.1.2 Distribution board (db). (1)
  - 5.1.3 Distribution main. (1)
  - 5.1.4 Volt (V). (1)
  - 5.1.5 Earth leakage. (1)
- 5.2 Explain what is meant by the term 3-phase power supply. (3)

### **QUESTION 6 – AIRCONDITIONING & VENTILATION (15)**

- 6.1 Define the meaning of air-conditioning. (4)
- 6.2 Define the meaning of ventilation. (4)
- 6.3 Identify 5 types of ventilating systems utilised in buildings. (5)
- 6.4 How are air changes in a room measured? (2)

### **QUESTION 7 – FIRE (10)**

- 7.1 What is a sprinkler system in a building & explain its workings? (5)
- 7.2 Explain the grading system to fire extinguishers and identify 3 different types. (5)

### **QUESTION 8 – REFUSE & WASTE DISPOSAL (5)**

- 8.1 Identify 5 pertinent points to consider with the provision of refuse and waste disposal yards. (5)

### **QUESTION 9 – LIFTS & ESCALATORS (5)**

- 9.1 Identify 5 points for consideration when placing lifts within a design. (5)

### **QUESTION 10 – DISABLED FACILITIES (3)**

- 10.1 What type of taps should be fitted within a disabled toilet facility? (1)
- 10.2 What are the minimum dimensions for the provision of a disabled parking bay? (2)

### **QUESTION 11 – BATHROOM DESIGN (20)**

You are appointed to design and produce a plan for council submission for the new male gym ablution block in Cresta. The client wants the following in the new ablution block: -

6x showers, 4x urinals, 2x WC & 2x WHB.

1. Design and draw the ground floor plan.
2. Scale 1:50.
3. All sanitary fittings must be shown.
4. Indicate all the required drainage.
5. Indicate the hot and cold water reticulation.
6. Show the position of the geyser.
7. Indicate the new electrical layout.
8. Indicate your source of ventilation.